

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of the Claims:

Claim 1 (currently amended) A method for producing a porous, polymeric material comprising the steps of:

- (a) providing a C/W emulsion comprising an aqueous phase, a matrix building material, a surfactant and a liquid CO₂ phase;
- (b) at least partially freezing the aqueous phase;
- (c) gasifying CO₂ from the liquid CO₂ phase to produce an intermediate porous material;
- (d) venting the gasified CO₂ from the intermediate porous material; and
- (e) freeze drying the intermediate porous material at least substantially to remove the aqueous phase and to form the porous material; wherein said porous material is water-soluble and said matrix building material is a water-soluble polymeric material.

Claim 2 (Original) A method for producing a porous material as claimed in claim 1, wherein the emulsion further comprises a dopant.

Claim 3 (Original) A method for producing a porous material as claimed in claim 2, wherein the dopant is substantially water-soluble.

Claim 4 (Previously Presented) A method for producing a porous material as claimed in claim 2, wherein the dopant is selected from one or more of the following dopants: pharmaceutical actives, pharmaceutical salts, enzymes, dyes, oxidising agents, reducing agents, cleaning agents, reagents for organic synthesis, agrochemicals, fabric softeners, clothes care agents, bleaches, flavours, fragrances, vitamins or nutraceuticals, metal

nanoparticles (e. g., metal hydrosols), inorganic nanoparticles, biological polymers (e. g., DNA, RNA), growth factors/cofactors, and live cells(e. g., stem cells).

Claim 5 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein a substantially water-soluble inorganic or organic additive is additionally used.

Claim 6 (Original) A method for producing a porous material as claimed in claim 5, wherein the additive is selected from one or more of the following additives: partially hydrolysed silica precursors (i. e., a silica sol), other alkoxide sols, hydroxyapatite salts, and sodium silicate.

Claim 7 (Canceled)

Claim 8 (Currently Amended) A method for producing a porous material as claimed in claim 7 1, wherein the polymeric material is substantially free of cross-linking.

Claim 9 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the matrix building material is a vinyl polymer material.

Claim 10 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the matrix building material is selected from one or more of the following group of materials: poly(vinyl alcohol), dextran, sodium alginate, poly(aspartic acid), poly(ethylene glycol), poly(ethylene oxide), poly(vinyl pyrrolidone), poly(acrylic acid), poly(acrylic acid)-sodium salt, poly(acrylamide), poly(N-isopropyl acrylamide), poly(hydroxyethyl acrylate), poly(acrylic acid), poly(sodium styrene sulfonate), poly(2-acrylamido-2-methyl-1-propanesulfonic acid), polysaccharides, and cellulose derivatives.

Claim 11 (canceled)

Claim 12 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the temperature of the emulsion is reduced to a temperature in the range of -5°C to -30°C.

Claim 13 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the CO₂ is gasified by means of depressurisation of the intermediate porous material.

Claim 14 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the surfactant is selected from one or more of the following list of surfactant: CTAB (cetyltrimethylammonium bromide), SDS (sodium dodecyl sulphate), pluronic surfactants, Brij 30 and Tween 40.

Claim 15 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the matrix building material is contained within the aqueous phase of the emulsion.

Claim 16 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the constituents of the emulsion are in the following quantities: the matrix building material is in the range of 5-20 % w/v and the surfactant is in the range of 5-20 % w/v in respect of H₂O and the CO₂ is in the range of 65-95 % v/v.

Claim 17 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the porous material is produced in the form of a monolithic block.

Claim 18 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the porous material is produced in the form of porous particles or beads.

Claim 19 (Previously Presented) A method for producing a porous material as claimed in claim 1, wherein the emulsion further comprises an active ingredient for incorporation into the porous material.

Claim 20 (Original) A method for producing a porous material as claimed in claim 19, wherein the active ingredient is selected from one or more from the following group; pharmaceutical actives, pharmaceutical salts, enzymes, dyes, oxidising agents, reducing agents, cleaning agents, reagents for organic synthesis, agrochemicals, fabric softeners, clothes care agents, bleaches, flavours, fragrances, vitamins or nutraceuticals, metal nanoparticles (e. g., metal hydrosols), inorganic nanoparticles, biological polymers (e. g., DNA, RNA), growth factors/cofactors, and live cells (e. g., stem cells).

Claim 21 (Previously Presented) A porous material obtainable by the method as claimed in claim 1; wherein said porous material is water-soluble.

Claim 22 (Canceled)

Claim 23 (Previously Presented) A water-soluble porous material according to claim 21, wherein the material is characterised by having

- (a) a median pore diameter within the range of 5-100 microns;
- (b) a total pore volume in the range of 8-15 cm³/g when approximately 80%v/v CO₂ is used; and
- (c) a bulk density typically in the range 0.02-0.06g/cm³.

Claim 24 (Previously Presented) A water-soluble porous material according to claim 21, characterised by having substantially no solvent residue remaining in the material that arises from the internal template phase.

Claim 25 (Previously Presented) A water-soluble porous material according to claim 21, being produced in the form of a moulded, monolithic block that substantially conforms to the shape of a vessel in which it is produced.

Claim 26 (Original) A porous material comprising a water-soluble polymeric matrix, which matrix comprises substantially no residual organic solvent.

Claim 27 (Original) A porous material according to claim 26 obtainable by a method which utilises substantially no organic solvent, hence the matrix being substantially free from any residual organic solvent component.

Claim 28 (Previously Presented) A porous material according to claim 26 comprising surfactant moieties entangled with the polymeric matrix.

Claim 29 (Original) A porous material according to claim 28, wherein the presence of surfactant moieties results from the formation of the porous material from a C/W emulsion comprising the surfactant moieties.

Claim 30 (Previously Presented) A porous material as claimed in claim 21, wherein the material is used for one or more of the following applications: biomaterials, tissue supports, food materials, tissue scaffolding, DNA storage, absorbent, controlled release matrices, scaffolds for sensor materials, wound-healing matrices, agrochemical release, reagent release (e. g., for chemical reactions), scaffold for combinatorial chemistry, molecular separations and diagnostic reagent release.